



Partner Reported Opportunities (PROs)
For Reducing Methane Emissions

Compressors/Engines ☐
Dehydrators ☒
Pipelines ☐
Pneumatics/Controls ☐
Tanks ☐
Valves ☐
Wells ☐
Other ☐

Pipe Glycol Dehydrator to Vapor Recovery Unit

Applicable sector(s):

☒ Production ☒ Processing ☒ Transmission and Distribution

Partners reporting this PRO: Marathon Oil Company

Other related PROs: Convert Gas Driven Chemical Pumps to Instrument Air, Replacing Gas Assisted Glycol Pumps with Electric Pumps, Reducing the Glycol Circulation Rates In Dehydrators, Rerouting of Glycol Skimmer Gas

Technology/Practice Overview

Description

Glycol dehydration units use electric or gas assist pumps to recirculate the lean (dry) glycol back to the gas contractor. Gas assist pumps are driven by expansion of the high-pressure gas entrained in the rich (wet) glycol. This methane gas is either vented to the atmosphere with water vapor that is boiled off in the glycol regenerator, or recovered for beneficial use with a flash tank separator.

When flash tank separators and other vents are piped to a vapor recovery unit (VRU), more gas can be recovered and less methane, VOC's and HAPs vented from the reboiler. The VRU boosts the recovered gas pressure enough to inject it into a fuel gas system, compressor suction, or gathering/sales line. Other benefits may come from compliance with the Maximum Achievable Control Technology (MACT) requirements.

Principal Benefits

Reducing methane emissions was:

☒ A primary justification for the project ☐ An associated benefit of the project

Operating Requirements

For full benefit from this practice, the existing VRU should have sufficient capacity to capture the maximum production tank vapor load simultaneously with the glycol dehydrator vent load.

Applicability

There are no limitations when the VRU discharges to a sales line or compressor suction. However, where the beneficial outlet is a fuel gas system, fuel usage may limit the amount of methane recovery.

Methane Savings

3,300 Mcf/yr

Costs

Capital Costs (including installation)

☐ < \$1,000 ☒ \$1,000-\$10,000 ☐ > \$10,000

Operating and Maintenance Costs (Annual)

☐ < \$100 ☐ \$100-\$1,000 ☒ > \$1,000

Payback (Years)

☒ 0-1 ☐ 1-3 ☐ 3-10 ☐ > 10

Methane Emission Reductions

With sufficient spare capacity in an existing production tank VRU, all of the gas collected by a glycol dehydrator flash tank separator can be recovered. A dehydrator with either an electric or energy exchange circulation pump can recover 300 or 900 scf of methane per MMcf of gas processed, respectively.

Economic Analysis

Basis for Costs and Savings

Methane emission reductions of 3,300 Mcf/yr apply to a 10 MMcf/d glycol dehydration unit, with a gas assist circulation pump and flash tank separator connected to an existing production tank VRU.

Discussion

This technology has a quick payback. The low cost of installing the piping connection between the VRU and flash tank separator vent and the incremental electrical power cost of the vapor recovery compressor partially offset the value of gas savings. At 7.5¢/kWh, electrical power cost would be about \$340 per MMcf/yr of gas recovered.